

## **4.8 MINERALS AND ENERGY RESOURCES**

This chapter presents the environmental consequences of mineral and energy exploration and development with regard to the management actions proposed under each of the four alternatives described in Chapter 2.

As described in Chapter 3, Minerals Section 3.8 the exploration and development of mineral and energy resources is accomplished through several stages of activity. The first stage (land categorization) involves determining which public lands should be available for exploration and development and under what conditions. The BLM has developed four categories to describe the conditions placed upon BLM-administered public lands regarding their availability for fluid hydrocarbon leasing. All BLM-administered public lands within the VPA fall under one of the following four leasing categories for oil and gas development:

- Standard Stipulations
- Timing and Controlled Surface Use
- No Surface Occupancy
- Closed to Leasing

In addition to the oil and gas leasing categories, locatable and saleable minerals areas are generally classified as either open or closed. Locatable minerals are usually the base and precious metal ores, ferrous metal ores, and certain classes of industrial minerals where acquisition is by staking a mining claim (location) over the deposit and then acquiring the necessary permits to explore or mine. Saleable minerals are defined as mineral commodities sold by sales contract from the federal government. Saleable minerals are generally common varieties of construction materials and aggregates, such as sand, gravel, cinders, roadbed, and ballast material.

### **4.8.1 Impacts Common to All Alternatives**

Essentially, the goals and objectives for mineral and energy development that are common to all alternatives are to help the BLM meet local and national, non-renewable and renewable energy and other public mineral needs, while ensuring a viable, long-term mineral industry and providing reasonable and necessary protections to other resources.

For both non-renewable and renewable alternative energy resources, the following principles would be applied:

1. Encourage and facilitate the development by private industry of public land mineral resources in a manner that satisfies national and local needs and provides for economical and environmentally sound exploration, extraction and reclamation practices.
2. Process applications, permits, operating plans, mineral exchanges, leases, and other use authorizations for public lands in accordance with existing policy and guidance.
3. Monitor saleable, locatable, and leasable mineral operations to ensure proper resource recovery and evaluation, production verification, diligence, inspection and enforcement of contract sales, common-use areas, community pits, free-use permits, leases, and prospecting permits.

The plan would recognize and be consistent with the National Energy Policy (National Energy Policy Development Group, 2001) by:

1. Recognizing the need for diversity in obtaining energy supplies
2. Encouraging conservation of sensitive resource values
3. Improving energy distribution opportunities

#### ***4.8.1.1 Oil and Gas Resources***

Under Alternatives A, B, and C, approximately 188,500 acres of split-estate lands (federal minerals-Tribal surface) within the Hill Creek Extension of the Uintah and Ouray Indian Reservation would be available for minerals leasing. The Hill Creek Extension is currently not available for minerals leasing under Alternative D. Therefore, Alternatives A, B, and C would have a larger amount of acreage available for minerals leasing than Alternative D – No Action.

Measures would be developed to avoid, minimize, or mitigate adverse environmental impacts that may result from federally authorized mineral lease activities on these split-estate lands. All potential mineral- and energy-related activities would be closely coordinated with the tribal government to ensure that their concerns are accommodated to the maximum extent possible under existing law and policy.

The impacts of permitting minerals leasing on split-estate lands within the VPA would be beneficial and long-term. Leasing of split-estate lands would lead to the permitting of additional wells, which would in turn, lead to an increase in the domestic supply of oil and/or natural gas and increased royalties to the federal government or the State of Utah. The Ute Tribe would also receive economic benefits from leasing their lands, including rentals or fees from the use of surface permits or other rights-of-way (ROWs).

#### ***4.8.1.2 Locatable Mineral Resources***

Locatable mining operations on lands open to mineral entry (as well as on claim locations that predate withdrawal) must be conducted in compliance with the 43 CFR 3809 (surface management) regulations. These regulations require an operator to prevent unnecessary or undue degradation of the land. The three levels of operation under these regulations are Casual Use, Notice, and Plan of Operation. In general, Casual Use mining activities only negligibly disturb federal lands and resources, and usually include recreational mining. This level of mining does not require mechanized equipment or explosives, does not require notification of the BLM, and does not require an approved plan of operations, but does require reclamation. Notice-level mining operations are on five acres or less within a mining claim or project area. A notice is submitted by the operator to the BLM that declares the intention of the operator to begin an operation, and this allows the BLM to review the operation for potential resource conflicts and to eliminate the need for federal action. Plan of Operation-level mining activities are on more than five acres, with required submission of an operations plan to the BLM. A Plan of Operations must document in detail all actions that the operator plans to take from exploration through reclamation. For activities other than casual use, the operator is required to submit either a notice or a plan of operations and a reclamation plan. A plan of operations and a reclamation plan are required where activities involve the surface disturbance of more than 5 acres. The plan of operations must include a description of the proposed activities, road access and construction, reclamation measures, timeframes of non-operation, and a sketch or a map of the area to be

disturbed, including all access routes. An environmental assessment (EA) or an environmental impact statement (EIS) must be prepared by the BLM or the claimant/operator prior to commencement of any surface-disturbing activities. A plan of operations must be approved by the BLM. Operations at the plan level may not commence until the plan is approved.

Five acres or less of surface disturbance usually requires a notice. The notice must describe the proposed activities, the location on the ground, the start-up date, road access and construction, if any, and reclamation measures. Receipt and review of a notice is not a Federal action; therefore, there is no requirement for the preparation of an EA or EIS. Approval by BLM is not required for a notice.

There is no requirement for notifying the BLM of casual use activities. Casual use activities are those that cause only negligible disturbance of the public lands and resources. For example, activities that do not involve the use of earthmoving equipment or explosives may be considered casual use.

Special Category Lands, as defined in 43 CFR 3809.1-4, always require a plan of operations. A plan of operation would have to be filed for operations conducted in:

- Areas in the National Wild and Scenic Rivers System and areas designated for potential addition to the System;
- Designated Areas of Critical Environmental Concern (ACECs);
- Areas designated as “closed” to OHV use (as defined in 43 CFR 8340-5);
- Any lands or waters known to contain federally proposed or listed threatened or endangered species, or their proposed or designated critical habitat.

The filing of Plans of Operation is generally more laborious than Notice-level operations, and the cost of the extraction of locatable mineral resources would be expected to increase in these areas. Given the moderate potential for the occurrence of economical locatable minerals within the planning area and the fact that there is limited development activity anticipated over the next 15 years, requirements for Plans of Operations would not likely have adverse economic impacts on most mining operators.

#### ***4.8.1.3 Mineral Materials***

Under all of the alternatives, all existing mineral material sites would be evaluated to determine continued need and ensure that they are accommodating user needs. All alternatives would allow applications for contract sale and free-use permits. Common-use areas and community pits would be established by the BLM in “open” areas, unless otherwise encumbered. The impacts of management decisions regarding these materials would be direct and beneficial in the long term.

#### ***4.8.1.4 Alternative Energy***

The goals and objectives for alternative energy development have the potential to provide economic benefits, both locally and regionally. Alternative energy development is considered by many to impact the human environment less than traditional, non-renewable forms of energy development. The goals and objectives reflect the economic need for alternative energy development of wind, solar, and geothermal energy. Individual development proposals would be evaluated based on conformance with the other program goals and objectives stated in the RMP. Alternative energy development would enhance the BLM’s ability to help meet local and

national energy needs, and it would assist in the growth of a practicable, long-term alternative energy industry while providing reasonable and necessary protections to other resources.

#### 4.8.2 Alternative Impacts

The following section describes the number of acres or miles that would be available for mineral development under each alternative, the potential for economical resource development, and the impacts of other resource decisions upon mineral resources in the VPA. Table 4.8.1 summarizes the number of acres or miles that would be available for energy and mineral development in the VPA under each alternative. The acreages shown for Gilsonite, phosphate, oil shale and mineral materials are in areas where the mineral resource was determined to have a high or moderate potential for occurrence (Vernal Field Office, 2004).

The impacts on minerals resource development from fire, forage, lands and realty, livestock and grazing, paleontological resources, rangeland improvements, riparian, roads and trails, wild horses, and woodlands management decisions would be minor or negligible. The impacts of these resources on minerals resources will not be analyzed further.

<b>TABLE 4.8.1. ACRES OR MILES OF LAND AVAILABLE TO ENERGY AND MINERAL DEVELOPMENT UNDER ALL ALTERNATIVES</b>				
<b>Resource</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D – No Action</b>
<b>Oil, Gas, and Coal-bed Methane</b>				
Standard Stipulations	982,904	1,113,116	858,619	918,315
Timing and Controlled Surface Use	793,878	706,281	768,466	617,715
No Surface Occupancy	66,483	42,053	58,670	136,930
Closed to Leasing	70,734	52,550	228,246	52,540
<b>Special Tar Sands</b>				
Standard Stipulations	51,829	61,424	43,530	116,208
Timing and Controlled Surface Use	200,836	198,238	195,566	101,279
No Surface Occupancy	10,803	3,806	3,696	11,589
Closed to Leasing	35,044	35,044	55,720	35,045
<b>Gilsonite (Miles)</b>				
Open	172.4	172.8	171.7	168.3
Closed	2.6	2.2	3.3	6.7
<b>Phosphate</b>				
Open	87,724	87,724	63,571	84,600
Closed	3,669	3,669	27,822	6,793
<b>Oil Shale</b>				
Open	298,629	305,736	292,453	290,740
Closed	18,745	11,638	24,921	26,634

**TABLE 4.8.1. ACRES OR MILES OF LAND AVAILABLE TO ENERGY AND MINERAL DEVELOPMENT UNDER ALL ALTERNATIVES**

Resource	Alternative A	Alternative B	Alternative C	Alternative D – No Action
<b>Mineral Materials</b>				
Open	415,395	432,953	388,699	387,700
Closed	33,807	16,249	60,503	61,502

#### 4.8.2.1 Effects of Mineral Decisions on Mineral Resources

##### 4.8.2.1.1 Alternative A

###### 4.8.2.1.1.1 Oil, Gas, and Coal-bed Methane (CBM)

Approximately 982,904 acres would be administratively available for oil, gas and coal-bed methane (CBM) leasing with Standard Stipulations. Approximately 793,878 acres would be administratively available for oil, gas and CBM leasing with Timing Limitations and/or Controlled Surface Use stipulations. Combined, approximately 1,776,782 acres of land would be administratively available for oil, gas and CBM leasing with Standard, Timing Limitation and/or Controlled Surface Use stipulations. This represents a 14% increase in the total acreage available for leasing, compared to Alternative D – No Action, and the second highest number of acres of land available for leasing among all of the alternatives.

Oil and gas development is expected to occur within each of the six exploration-and-development areas shown in Table 4.8.2. Coal-bed methane development would occur only in the East and West Tavaputs Plateau. The predicted number of wells is based on the Reasonably Foreseeable Development (RFD) described in the Mineral Potential Report for the VPA (Vernal Field Office 2004). If Alternative A were implemented, there would be a 1.5% increase in the total number of predicted oil and gas wells, compared to Alternative D – No Action.

**TABLE 4.8.2. PREDICTED OIL AND GAS WELLS WITHIN RFD AREAS UNDER ALTERNATIVE A <sup>1</sup>**

Exploration and Development/RFD Area	Percent of Open Area	Predicted Oil Wells	Predicted Gas Wells	Predicted CBM Wells
Altamont-Bluebell	99.97%	175	250	0
East Tavaputs Plateau	94.96%	71	570	76
Manila-Clay Basin	97.86%	0	44	0
Monument Butte-Red Wash	96.59%	1655	3018	0
Tabiona-Ashley Valley	96.26%	29	0	0
West Tavaputs Plateau	95.53%	72	334	48
<b>Total</b>		<b>2,002</b>	<b>4,216</b>	<b>124</b>

<sup>1</sup> Note: Calculations based on all land-type jurisdictions occurring in the VPA (Bureau of Land Management, State of Utah, Tribal, Private, U.S. Fish and Wildlife Service, Bureau of Reclamation, Utah Division of Wildlife Resources, and U.S. Forest Service).

The direct impacts of mineral resources decisions on oil, gas and CBM development would be beneficial. An increase in the potential number of oil and gas wells under Alternative A would lead to an increase in the available supply of oil and/or natural gas. This would have a short-term beneficial socioeconomic impact on the minerals extraction industry and on local economies from increased production, and by maintaining the supply of an energy resource.

The indirect impacts of mineral resources decisions on oil and gas development would be beneficial and adverse. An increase in the potential number of oil and gas wells under Alternative A would lead to an increase in royalties paid to the federal government and/or the State of Utah, as the oil and gas wells were developed and the resource was extracted. However, the increased total acreage that would be open to oil, gas, and CBM development would also diminish the quantity of finite fossil fuel resources found in the VPA, which would have a long-term adverse impact on the mineral resources extraction industry and on the local economies that support the development and extraction of the resource.

#### *4.8.2.1.1.2 Other Mineral Resources*

The impacts of mineral resource decisions on mineral resources other than fluid minerals are described below. Impacts are the same for each resource. Following is a quantitative analysis providing a comparison of mineral resources decision under Alternative A to Alternative D – No Action.

Direct impacts of mineral resources decisions on tar sands, Gilsonite, phosphate, oil shale, and mineral materials development would be beneficial. An increase in the total linear miles available for Gilsonite and phosphate development, and the total acreage available for tar sands, oil shale, and mineral materials development would have a short-term, beneficial socioeconomic impact on the oil industry and the local economies that support the industry resulting from an increase in the amount of mineral resources available for extraction and commercial sale.

Indirect impacts of mineral resources decisions on tar sands, Gilsonite, phosphate, oil shale, and mineral materials development would be beneficial and adverse. An increase in the linear miles available for Gilsonite and phosphate development, and the total acreage available for tar sands, oil shale, and mineral materials development under Alternative A would lead to an increase in royalties paid to the federal government and/or the State of Utah. An increase in the total linear miles available for Gilsonite and phosphate development, and the total acreage available for tar sands, oil shale, and mineral materials development would, over time, decrease the amount of the finite mineral resources found in the VPA, producing indirect, long-term, adverse economic impacts.

#### Special Tar Sands

Approximately 51,829 acres would be administratively available for tar sand leasing with Standard Stipulations. Approximately 200,836 acres would be administratively available for tar sand leasing with Timing Limitations and/or Controlled Surface Use stipulations. Combined, 252,665 acres would be administratively available for tar sand leasing with Standard, Timing and/or Controlled Surface Use stipulations. This represents a 16% increase in the total acreage available for tar sand leasing, compared to Alternative D – No Action.

### Coal

Coal mining has not occurred on public lands in the VPA due to lack of demand and the poor quality of the deposits. There is a moderate potential for the occurrence of economically mineable coal deposits within the VPA, but it is unlikely that coal exploration or development will occur during the next 15 years due to the low-grade quality of the coal. Therefore, it is unlikely that mineral resource decisions made under this alternative would have impacts, either beneficial or adverse, on coal resources.

### Gilsonite

Approximately 172.4 miles would be open for prospecting, leasing, and development of Gilsonite. Additional, new veins located via field study or prospecting would also be available if they are within lands already categorized as “open” for Gilsonite development. This represents a 2.4% increase in the total acreage open for prospecting, leasing, and developing Gilsonite, compared to Alternative D – No Action.

### Phosphate

Approximately 87,724 acres would be open for prospecting, leasing, and development of phosphate within areas known to contain phosphate deposits. This represents a 3.7% increase in the total acreage open for prospecting, leasing and developing phosphate, compared to Alternative D – No Action.

### Oil Shale

Within the known oil shale leasing areas, 298,629 acres would be open for leasing if regulations providing for this mineral development are promulgated. This represents a 3% increase in the total acreage open for oil shale leasing, compared to Alternative D – No Action.

### Mineral Materials

Approximately 415,395 acres would be open for mineral material development. This represents a 7% increase in the total number of acres available for development of mineral materials, compared to Alternative D – No Action.

### Locatable Minerals

As identified in the Mineral Potential Report (Vernal Field Office 2004), there is moderate potential for the occurrence of locatable minerals within the VPA. Very little development activity for locatable minerals is anticipated during the next 15 years; therefore, it is unlikely that mineral resource decisions under this alternative would have an impact, beneficial or adverse, on locatable mineral resources.

#### 4.8.2.1.2 Alternative B

##### 4.8.2.1.2.1 Oil, Gas, and Coal-bed Methane (CBM)

Approximately 1,113,116 acres would be administratively available for oil, gas and CBM leasing with Standard Stipulations. Approximately 706,281 acres would be administratively available for oil, gas and CBM leasing with Timing Limitations and/or Controlled Surface Use stipulations.

Combined, approximately 1,819,397 acres of land would be administratively available for oil, gas, and CBM leasing with standard, Timing Limitations, and/or Controlled Surface Use stipulations. This represents an 18% increase in the total acreage available for leasing and potential number of wells, compared to Alternative D – No Action and the highest number of acres of land available for leasing among all of the alternatives.

Oil and gas development is expected to occur within each of the six exploration-and-development areas shown in Table 4.8.3. Coal-bed methane development would occur only in the East and West Tavaputs Plateau. The predicted number of wells is based on the Reasonably Foreseeable Development (RFD) outlined in the Mineral Potential Report for the VPA (Vernal Field Office 2004). If Alternative B were implemented, there would be a 2.2% increase in the total number of predicted oil and gas wells, compared to Alternative D – No Action.

<b>TABLE 4.8.3. PREDICTED OIL AND GAS WELLS WITHIN RFD AREAS UNDER ALTERNATIVE B<sup>2</sup></b>				
<b>Exploration and Development/RFD Area</b>	<b>Percent of Open Area</b>	<b>Predicted Oil Wells</b>	<b>Predicted Gas Wells</b>	<b>Predicted CBM Wells</b>
Altamont-Bluebell	99.97	175	250	0
East Tavaputs Plateau	95.19	71	571	76
Manila-Clay Basin	97.98	0	44	0
Monument Butte-Red Wash	97.93	1665	3036	0
Tabiona-Ashley Valley	96.69	29	0	0
West Tavaputs Plateau	99.65	75	349	50
<b>Total</b>		<b>2,015</b>	<b>4,250</b>	<b>126</b>

The direct and indirect impacts of minerals decisions under Alternative B for oil, gas, and CBM development would be similar to those described under Alternative A.

#### 4.8.2.1.2.2 Other Mineral Resources

The direct and indirect impacts on tar sand, Gilsonite, phosphate, oil shale, and mineral materials resources under Alternative B would be similar to the impacts described under Alternative A. Following is a quantitative analysis providing a comparison of mineral resources decision under Alternative A to Alternative D – No Action.

#### Special Tar Sands

Approximately 61,424 acres would be administratively available for tar sand leasing with Standard Stipulations. Approximately 198,238 acres would be administratively available for tar sand leasing with Timing Limitations and/or Controlled Surface Use stipulations. Combined, approximately 259,662 acres would be administratively available for tar sand leasing with standard, Timing Limitations, and/or Controlled Surface Use stipulations. This represents a

<sup>2</sup> Note: Calculations based on all land-type jurisdictions occurring in the VPA (Bureau of Land Management, State of Utah, Tribal, Private, U.S. Fish and Wildlife Service, Bureau of Reclamation, Utah Division of Wildlife Resources, and U.S. Forest Service).



19.4% increase in the total acreage available for tar sand leasing, compared to Alternative D – No Action.

#### Coal

The impacts on coal resources under Alternative B would be similar to those described for Alternative A.

#### Gilsonite

Approximately 172.8 miles would be open for prospecting, leasing, and development of Gilsonite. This represents a 2.7% increase in the total acreage open for prospecting, leasing, and developing Gilsonite, compared to Alternative D – No Action.

#### Phosphate

Approximately 87,724 acres would be open for prospecting, leasing, and development of phosphate within areas known to contain phosphate deposits. This represents a 3.7% increase in the total acreage open for prospecting, leasing, and developing phosphate, compared to Alternative D – No Action.

#### Oil Shale

Within the known oil shale leasing areas, 305,736 acres would be open for leasing if regulations providing for such are promulgated. This represents a 5% increase in the total acreage open for oil shale leasing, compared to Alternative D – No Action.

#### Mineral Materials

Approximately 432,953 acres would be available for mineral material development. This represents a 2.6% increase in the total acreage available for development of mineral materials, compared to Alternative D – No Action Alternative.

#### Locatable Minerals

The impacts on locatable resources under Alternative B would be similar to the impacts described under Alternative A.

#### 4.8.2.1.3 Alternative C

##### 4.8.2.1.3.1 Oil, Gas, and Coal-bed Methane (CBM)

Approximately 858,619 acres would be administratively available for oil, gas and CBM leasing with Standard Stipulations. Approximately 768,466 acres would be administratively available for oil, gas, and CBM leasing with Timing Limitations and/or Controlled Surface Use stipulations. Combined, approximately 1,627,085 acres of land would be administratively available for oil, gas, and CBM leasing with Standard, Timing Limitations, and/or Controlled Surface Use stipulations. This represents a 6% increase in the total acreage available for leasing and potential number of wells, compared to Alternative D – No Action. Alternatives A, B, and C would increase the number of acres available for oil, gas, and CBM leasing, compared to Alternative D – No Action. Although there would be an increase in the number of acres available for oil, gas,

and CBM leasing, Alternative C would have the least oil and gas development of all of the alternatives.

Oil and gas development is expected to occur within each of the six exploration-and-development areas shown in Table 4.8.4. CBM development would occur only in the East and West Tavaputs Plateau. The predicted number of wells is tied to the RFD outlined in the Mineral Potential Report (Vernal Field Office 2004). If Alternative C were implemented, there would be a 0.4% decrease in the total number of predicted oil and gas wells, compared to Alternative D – No Action.

<b>Exploration and Development/RFD Area</b>	<b>Percent of Open Area</b>	<b>Predicted Oil Wells</b>	<b>Predicted Gas Wells</b>	<b>Predicted CBM Wells</b>
Altamont-Bluebell	99.97	175	250	0
East Tavaputs Plateau	85.18	64	511	68
Manila-Clay Basin	97.80	0	44	0
Monument Butte-Red Wash	96.51	1,641	2,992	0
Tabiona-Ashley Valley	93.93	28	0	0
West Tavaputs Plateau	95.17	71	333	48
<b>Total</b>		<b>1,979</b>	<b>4,130</b>	<b>116</b>

Direct impacts of mineral resources decisions on oil and gas development would be marginally adverse. A small decrease in the potential number of oil and gas wells under Alternative C could result in a small decrease in the commercially available supply of oil and natural gas, in comparison to current management practices. This would have a minor, but direct and adverse, long-term economic impact on the minerals industry by potentially reducing the quantity of minerals resource available for extraction. Reducing the potential number of wells would reduce the long-term adverse impacts on the minerals resource by ensuring that the resource was available to support a viable, long-term mineral industry.

Indirect impacts of mineral resources decisions on oil and gas development would be marginally adverse and economically related, as a slight decrease in the potential number of oil and gas wells under Alternative C would lead to a slight decrease in the royalties paid to the federal government and/or the State of Utah.

#### *4.8.2.1.3.2 Other Mineral Resources*

The direct and indirect impacts on tar sand, Gilsonite, oil shale, and mineral materials resources under Alternative C would be similar to the impacts described under Alternative A. The increase in the amount of total acreage available for tar sand, Gilsonite, oil shale, and mineral material development under Alternative C would be less than that under Alternative B, but more than

<sup>3</sup> Note: Calculations based on all land-type jurisdictions occurring in the VPA (Bureau of Land Management, State of Utah, Tribal, Private, U.S. Fish and Wildlife Service, Bureau of Reclamation, Utah Division of Wildlife Resources, and U.S. Forest Service).

under Alternative D – No Action. Following is a quantitative analysis providing a comparison of mineral resources decision under Alternative C to Alternative D – No Action.

Direct impacts of mineral resources decisions on phosphate development would be adverse. A decrease in the total acreage available for phosphate development under Alternative C (compared to Alternative D – No Action) would result in a decrease in the amount of phosphate available for mining and commercial sale, which would have a long-term, adverse economic impact on the phosphate mining industry in the VPA. However, a decrease in the total acreage available for phosphate development would also prolong the availability of finite phosphate resources found in the VPA for future use, which would reduce the long-term adverse impacts on the phosphate mining industry by ensuring that the resource was available to support a viable, long-term phosphate mining industry. Indirect impacts of mineral resources decisions on phosphate development would be economically adverse in the long-term. A reduction in the acreage available for phosphate development under Alternative C (when compared to Alternative D) would lead to a decrease in the royalties paid to the federal government and/or the State of Utah.

#### Special Tar Sands

Approximately 43,530 acres would be administratively available for tar sands leasing with Standard Stipulations. Approximately 195,566 acres would be administratively available for tar sand leasing with Timing Limitations and/or Controlled Surface Use stipulations. Combined, 239,096 acres would be administratively available for tar sand leasing with standard, Timing Limitations, and/or Controlled Surface Use stipulations. This represents a 10% increase in the total acreage available for tar sand leasing, compared to Alternative D – No Action Alternative.

#### Coal

The direct and indirect impacts on coal resources under Alternative C would be similar to the impacts described for coal under Alternative A.

#### Gilsonite

Approximately 171.1 miles would be available for prospecting, leasing, and development of Gilsonite. Additional, new veins located via field study or prospecting would also be available if they are within lands already categorized as “open” for Gilsonite development. This represents a 2% increase in the total acreage open for prospecting, leasing, and developing Gilsonite, compared to Alternative D – No Action.

#### Phosphate

Approximately 84,600 acres would be open for prospecting, leasing, and development of phosphate within areas known to contain phosphate deposits. This represents a 25% decrease in the total acreage open for prospecting, leasing, and developing phosphate, compared to Alternative D – No Action.

#### Oil Shale

Within the known oil shale leasing areas, 292,453 acres would be open for leasing if regulations providing for such are promulgated. This represents a 0.6% increase in the total acreage open for oil shale leasing, compared to Alternative D – No Action Alternative.

### Mineral Materials

Approximately 388,699 acres would be available for mineral material development. This represents a 0.2% increase in the total acreage available for development of mineral materials, compared to Alternative D – No Action Alternative.

### Locatable Minerals

The impacts on locatable resources under Alternative C would be similar to the impacts described under Alternative A.

#### 4.8.2.1.4 Alternative D – No Action Alternative

##### 4.8.2.1.4.1 Oil, Gas, and Coal-bed Methane (CBM)

Approximately 918,315 acres would be available for oil and gas lease under Standard leasing stipulations. Approximately 617,715 acres would be managed with special mitigating measures required to protect various renewable resource values. In total, approximately 1,536,030 acres of land would be administratively available for oil, gas and CBM leasing under Standard, Timing Limitation and/or Controlled Surface Use lease stipulations.

Oil and gas development would be expected to occur within each of the six development areas shown in Table 4.8.5. The predicted number of wells for these areas is based on estimates of RFD outlined in the Mineral Potential Report (Vernal Field Office 2004). Under this alternative the federal government and/or the State of Utah would continue to receive royalties from the production and sale of oil and gas. Continued oil and gas extraction would also, over time, reduce the quantities of finite fossil fuel resources found in the VPA.

<b>TABLE 4.8.5. PREDICTED OIL AND GAS WELLS WITHIN RFD AREAS UNDER ALTERNATIVE D – NO ACTION ALTERNATIVE<sup>4</sup></b>				
<b>Exploration and Development/RFD Area</b>	<b>Percent of Open Area</b>	<b>Predicted Oil Wells</b>	<b>Predicted Gas Wells</b>	<b>Predicted CBM Wells</b>
Altamont-Bluebell	99.94	175	250	0
East Tavaputs Plateau	80.84	61	485	64
Manila-Clay Basin	95.20	0	43	0
Monument Butte-Red Wash	89.52	1,522	2,775	0
Tabiona-Ashley Valley	95.30	29	0	0
West Tavaputs Plateau	95.16	71	333	48
<b>Total</b>		<b>1,858</b>	<b>3,886</b>	<b>112</b>

<sup>4</sup> Note: Calculations based on all land-type jurisdictions occurring in the VPA (Bureau of Land Management, State of Utah, Tribal, Private, U.S. Fish and Wildlife Service, Bureau of Reclamation, Utah Division of Wildlife Resources, and U.S. Forest Service).

#### *4.8.2.1.4.2 Other Mineral Resources*

The direct and indirect impacts on tar sand, Gilsonite, phosphate, oil shale, and mineral materials resources under Alternative D would be similar to the impacts described under Alternative A.

##### Special Tar Sand Areas

Approximately 116,208 acres would be available for future tar sand development using Standard mining plans and stipulations. Approximately 101,279 acres would be administratively available for tar sand leasing with Timing Limitations and/or Controlled Surface Use stipulations.

Approximately 11,589 acres would be administratively available for tar sand leasing with a No Surface Occupancy stipulation. Approximately 35,045 acres would not be available for tar sand leasing.

##### Coal

The impacts on coal resources under Alternative D would be similar to those described for Alternative A.

##### Gilsonite

Approximately 168.3 miles would be open for prospecting, leasing, and development of Gilsonite. Restrictions placed on a lease or subsequent conditions of approval do not apply to maintenance and production of existing facilities. Restrictions from other resource decisions would be applied to new leases, or at the time of lease renewal, for existing leases. Exploration and development of Gilsonite within crucial deer and elk winter range would be allowed year-round but would require management actions designed to mitigate both short- and long-term loss of habitat.

##### Phosphate

Approximately 84,600 acres would be open for prospecting, leasing, and development of phosphate within areas known to contain phosphate deposits.

##### Oil Shale

Within the known oil shale lease areas, 290,740 acres would be open for leasing.

##### Mineral Materials

Approximately 387,700 acres would be available for mineral material development.

##### Locatable Minerals

The impacts on locatable resources under Alternative D would be similar to the impacts described under Alternative A.

#### ***4.8.2.2 Effects of Cultural Resource Decisions on Mineral Resources***

##### *4.8.2.2.1 Alternative A*

Cultural resource decisions under Alternative A would restrict oil and gas leasing on 48,801 acres of land in the Uintah Foothills, Little/Devil's Hole, Upper Willow Creek and Four Mile

Wash areas. Oil and gas leasing within these areas would have Timing Limitations and/or Controlled Surface Use stipulations and/or No Surface Occupancy stipulations. The 48,801 acres in these two leasing categories is included in the total number of acres available for oil and gas leasing (Table 4.8.1).

Cultural resource decisions under Alternative A would have long-term, indirect, adverse impacts to mineral resources. Impacts include increasing the costs associated with mineral exploration, extraction, and development, which would have economically adverse impacts on the mineral materials industry in the VPA. Increased costs are associated with directionally drilling for sub-surface resources in NSO areas, the re-routing of access roads and pipelines, and re-locating well pads.

#### 4.8.2.2.2 Alternative B

The impacts on mineral resources under Alternative B would be similar to the impacts described under Alternative A.

#### 4.8.2.2.3 Alternative C

Cultural resource decisions under Alternative C would close 48,801 acres of land to oil and gas leasing in the Uintah Foothills, Little/Devil's Hole, Upper Willow Creek and Four Mile Wash areas. The 48,801 acres in this leasing category is included in the total number of acres available for oil and gas leasing (Table 4.8.1).

Cultural resource decisions under Alternative C would have long-term, indirect, adverse impacts to mineral resources. Impacts include increasing the costs associated with mineral exploration, extraction, and development, which would have economically adverse impacts on the mineral materials industry in the VPA. Increased costs are associated with directionally drilling for sub-surface resources in NSO areas, the re-routing of access roads and pipelines, and re-locating well pads.

#### 4.8.2.2.4 Alternative D – No Action Alternative

Cultural resource decisions under Alternative C would leave open 48,801 acres of land to oil and gas leasing in the Uintah Foothills, Little/Devil's Hole, Upper Willow Creek and Four Mile Wash areas. The 48,801 acres in this leasing category is included in the total number of acres available for oil and gas leasing (Table 4.8.1).

Impacts include a decrease in the costs associated with mineral exploration, extraction and development and possibly increasing the pace at which mineral resources would be developed. Fewer restrictions would allow direct, planned placement of access roads and pipelines to and from wells; thus, in many cases, the time required to develop oil, gas and CBM wells would be reduced.

### ***4.8.2.3 Effects of Recreation Resource Decisions on Mineral Resources***

#### 4.8.2.3.1 Alternative A

Recreation resource decisions to mitigate noise and light pollution adjacent to Dinosaur National Monument would have long-term, indirect, adverse impacts to mineral resources. Minimizing noise and light pollution would impact development by increasing its costs. However, these costs would be minimal in comparison to total operation and development costs. Recreation resource

decisions under this alternative would also lead to decreased opportunities for exploration adjacent to Dinosaur National Monument. In this case, impacts, beneficial or adverse, would be based on mineral potential adjacent to Dinosaur National Monument. It is unlikely that requirements to minimize noise and light pollution would lead to the denial of a proposed project.

This decision would impact mineral resources more than Alternative D – No Action Alternative, which does not address light pollution and noise mitigation impacts adjacent to the Monument.

#### 4.8.2.3.2 Alternative B

Impacts to mineral resources would be the same as for Alternative A.

#### 4.8.2.3.3 Alternative C

Impacts to mineral resources from the decision to mitigate noise and light would be the same as for Alternatives A and B.

The decision to have No Surface Occupancy for oil and gas activities within 0.5 mile of Dinosaur National Monument would be a long-term, direct and indirect, adverse impact to minerals, in an indirect relationship with the potential for minerals in those areas. Impacts include an increase in development costs associated with directional drilling operations. The recreation resource decisions under this alternative are substantially more restrictive to mineral and energy resources development than any other alternative.

#### 4.8.2.3.4 Alternative D – No Action Alternative

Recreation resource decisions are not specified under this alternative. Impacts to mineral resources could be long-term, direct/indirect, and beneficial. Impacts would include an increase in the potential number of wells permitted, increased domestic supply of oil and natural gas, and increased royalties to the federal government and the State of Utah. Impacts would be based on mineral potential adjacent to the Monument.

### **4.8.2.4 Effects of Soil Resources Decisions on Mineral Resources**

#### 4.8.2.4.1 Alternative A

Soils resource decisions that require an approved erosion control strategy (surveyed and designed by a certified engineer and approved by the BLM) prior to construction and maintenance on slopes 21-40% would be a long-term, indirect, economically adverse impact on the mineral resources industry by potentially increasing the costs of mineral exploration, extraction, and development associated with these requirements when compared to Alternative D – No Action.

Soils resource decisions that do not allow surface disturbance on slopes greater than 40% (unless it is determined that it would cause undue or unnecessary degradation to pursue other placement alternatives (if available)) would be a long-term, direct, economically adverse impact on the mineral resources industry. Adverse impacts would include a potential decrease in the number of wells or other mineral developments permitted, which in turn would lead to decreased royalties to the federal government and/or the State of Utah, and a potential loss of revenue for minerals operators.

Alternative A would impact mineral resources less than Alternative D – No Action, which would allow No Surface Occupancy or other minerals-related surface disturbances on slopes in excess of 40%.

#### 4.8.2.4.2 Alternative B

Soils resource decisions under Alternative B require an approved erosion control strategy (surveyed and designed by a certified engineer and approved by the BLM) prior to construction and maintenance on slopes greater than 20% would be a long-term, indirect, adverse impact to mineral resources. Impacts include potential increased costs of mineral exploration, extraction, and development associated with these requirements.

This decision would impact mineral resources less than current management, which allows No Surface Occupancy or other surface disturbance on slopes in excess of 40%.

#### 4.8.2.4.3 Alternative C

Soil resource decisions under Alternative C would be similar to those for Alternative A.

#### 4.8.2.4.4 Alternative D – No Action Alternative

Soils resource decisions to allow no surface disturbance on slopes greater than 40% would be a long-term, indirect, adverse impact to mineral resources. Impacts include increasing the costs associated with mineral exploration, extraction, and development.

#### **4.8.2.5 Effects of Special Status Species Resource Decisions on Mineral Resources**

All alternatives require some degree of spatial or temporal limitations on many surface-disturbing activities, in order to protect sensitive species and their important habitats. In the case of mineral and energy development, specific conditions of approval or lease terms are often required in order to mitigate the adverse affects of development activities on special status species. In order to quantify the overall effect of spatial and temporal limitations on energy and mineral development, an accessibility analysis is located at the end of this chapter that graphically depicts the cumulative effect of spatial and temporal limitations on accessibility to mineral and energy development by industry. Not all spatial and temporal limitations would apply to every lease; it would be very rare for any one lease to have so many limitations as to render it inaccessible for energy development.

Spatial and temporal limitations would have an adverse impact on minerals and energy development by increasing exploration costs, but the degree and magnitude of such an increase depends on several factors. In most cases the economic costs associated with mineral and energy development would not increase substantially as a result of spatial and temporal limitations. Because most of the VPA available to mineral and energy development is currently leased (approximately 70% of available areas), few operators would likely realize increased exploration costs due to spatial and temporal limitations. Even though an operator may temporarily have to refrain from development in one area of the lease because of spatial and temporal restrictions, opportunities to drill other portions of the lease may still be available. In the case of numerous overlapping stipulations, the timeframe in which drilling operation can occur given constraints (drilling window) may be very limited, which could cause adverse economic impacts. But if the drilling window were very broad, then adverse economic impacts would be relatively minor in



terms of the total number of operators potentially impacted. Operators have demonstrated a willingness to comply with spatial and temporal restrictions and over the years have developed strategies to minimize the economic risks associated with development.

Overall, it is estimated that a small number of operators may experience adverse economic effects if drilling operations must be stayed during special status species protection periods or if drilling operation must be moved to another area on the lease. Lease stipulations or lease notices would assist in educating operators to plan drilling schedules during the open drilling period.

#### 4.8.2.5.1 Alternative A

##### 4.8.2.5.1.1 Raptors

In general, raptor protections under Alternative A would be more restrictive to mineral and energy development than Alternative D – No Action Alternative. Alternative A would establish spatial and seasonal buffers for raptors under the auspices of best management practices (BMPs), which would include implementation of buffers comparable to the USFWS *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (Appendix A), with modifications allowed by the BLM as long as the protection of raptor nests is ensured. Restrictions are specific to both occupied and unoccupied nests (Table 4.8.6).

Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. It is difficult to quantify the effects of raptor protection guidelines on mineral and energy development. Several factors determining the economic impacts are involved, such as the year the lease was issued, the size of the proponent's lease, and the proponent's "priority list." A database of raptor nests and their activity status is kept at the Vernal Field Office. This database would be referenced as part of the site-specific environmental analysis required prior to drilling a well or developing an area for mineral or energy. It can provide the proponent with information and guide the management of its lease, thereby decreasing development costs caused by waiting for a particular nest's appropriate temporal and spatial restriction.

Depending on field conditions, the BLM may be able to eliminate restrictions via modifications, waivers, or exemptions. During site-specific analyses, the spatial or temporal restrictions may be determined to be unnecessary if there are circumstances that would mitigate potential development impacts to raptors, such as terrain or vegetative screen.

Modification, exemptions, or waivers to spatial and temporal buffers may directly impact mineral resources both adversely and beneficially, depending on the type of modification. Spatial and temporal buffers may preclude mineral and energy development in some cases, thereby temporarily reducing the potential number of wells drilled or other mineral developments and temporarily decreasing/delaying royalties to the federal government and/or the State of Utah. On the other hand, modifications, exemptions or waivers may, in some cases, allow mineral development to occur. This would increase the potential number of wells drilled or other mineral development, increase the domestic supply of oil and natural gas or other minerals, and increase royalties to the federal government and/or the State of Utah.

<b>TABLE 4.8.6. SEASONAL RESTRICTIONS WITHIN ESTABLISHED BUFFER ZONES APPLIED TO MINERAL RESOURCES UNDER ALTERNATIVE A</b>													
<b>Species</b>	<b>Dates</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
Bald eagle	1/8 - 8/31												
Golden eagle	1/1 - 8/31												
Northern goshawk	4/15 - 8/20												
Northern harrier	4/1 - 7/15												
Cooper's hawk	5/1 - 8/15												
Ferruginous hawk	3/1 - 8/1												
Red-tailed hawk	4/1 - 7/15												
Sharp-shinned hawk	6/20 - 8/15												
Swainson's hawk	4/1 - 7/15												
Turkey vulture	5/15 - 8/15												
Peregrine falcon	2/1 - 8/31												
Prairie falcon	4/1 - 7/15												
Merlin	4/15 - 6/25												
American kestrel	5/1 - 6/30												
Osprey	4/1 - 7/15												
Burrowing owl	4/1 - 7/15												
Great horned owl	2/1 - 5/15												
Long-eared owl	3/15 - 6/15												
Short-eared owl	4/10 - 6/15												
Mexican spotted owl	3/1 - 8/31												
Sage Grouse	3/1 - 5/31												
Crucial Deer and Elk Winter Range	11/15 - 4/30												
Mule Deer Migration Corridor	4/15 - 5/31												

*4.8.2.5.1.2 Sage Grouse*

Management of sage grouse under Alternative A would be similar to Alternative D – No Action Alternative. It is not likely that management decisions under Alternative A would have a greater impact on mineral and energy development than Alternative D – No Action Alternative. Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. Economic impacts to mineral and energy development would depend on the same factors considered for raptors (see above) and vary by alternative.

*4.8.2.5.2 Alternative B*

*4.8.2.5.2.1 Raptors*

Raptor protections under Alternative B would be less restrictive to mineral and energy development than Alternative D – No Action Alternative. Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. Management of raptors under Alternative B would consider the least restrictive management options (see Section 4.8.3.6.1 Alternative A, Raptors; Table 4.8.7).

*4.8.2.5.2.2 Sage Grouse*

Management of sage grouse under Alternative B would be similar to Alternative D – No Action Alternative. It is not likely that management decisions under Alternative B would have a greater impact on mineral and energy development than Alternative D – No Action Alternative. Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. Economic impacts to mineral and energy development would depend on the same factors considered for raptors (see Section 4.8.3.6.1 Alternative A, Raptors) and vary by alternative. The number of acres closed to mineral and energy development due to sage grouse protections is included under each of the alternatives. The impacts of management decisions for sage grouse are similar to those of raptors.

*4.8.2.5.3 Alternative C*

*4.8.2.5.3.1 Raptors*

Management of raptors under Alternative C would implement spatial and seasonal buffers for raptors as recommended in Table 2 of the USFWS *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (see Appendix A). This is more restrictive than management of raptors under Alternative D – No Action Alternative and would likely impact mineral resources more than Alternative D – No Action Alternative. Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. Under this alternative, there is the potential that fewer wells would be permitted, given the more stringent protection guidelines (see Section 4.8.3.6.1 Alternative A, Raptors; Table 4.8.8).

#### *4.8.2.5.3.2 Sage Grouse*

Management of sage grouse under Alternative C would be more restrictive than Alternative D – No Action Alternative, but it is not likely that management decisions under Alternative C would have a greater impact on mineral and energy development than Alternative D – No Action Alternative. Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. Economic impacts to mineral and energy development would depend on the same factors considered for raptors (see Section 4.8.3.6.1 Alternative A, Raptors) and vary by alternative. The number of acres closed to mineral and energy development due to sage grouse protections is included under each of the alternatives. The impacts of management decisions for sage grouse are similar to those of raptors.

#### *4.8.2.5.4 Alternative D – No Action Alternative*

##### *4.8.2.5.4.1 Raptors*

Alternative D would maintain the spatial and seasonal buffers in the Diamond Mountain area for the twenty special status or sensitive raptor species listed in the Diamond Mountain RMP. Raptor buffers in the Book Cliffs area would remain unspecified. Impacts to mineral and energy resources include an increase in the existing development costs due to accommodating existing spatial and seasonal buffers and temporary delay in royalties paid to the federal government and/or the State of Utah (see Section 4.8.3.6.1 Alternative A, Raptors; Table 4.8.9).

##### *4.8.2.5.4.2 Sage Grouse*

Management of sage grouse under Alternative D would continue. Impacts to mineral and energy resources include an increase in development costs and temporary delay in royalties paid to the federal government and/or the State of Utah. Economic impacts to mineral and energy development would depend on the same factors considered for raptors (see Section 4.8.3.6.1 Alternative A, Raptors) and vary by alternative.

#### ***4.8.2.6 Effects of Wildlife Decisions on Mineral Resources***

##### *4.8.2.6.1 Alternative A*

Wildlife resource decisions to implement timing restrictions on activities that could adversely impact deer and elk winter range would be a long-term, indirect, adverse impact to mineral resources. Potential impacts include increasing the costs associated with mineral exploration, extraction, and development, as well as decreasing opportunities for development. However, it is unlikely that the impacts would be substantially more significant than current management because timing restrictions would be increased only 15 days above the criteria currently used in the Diamond Mountain area and Book Cliffs area.

<b>TABLE 4.8.7. SEASONAL RESTRICTIONS IN ESTABLISHED BUFFER ZONES APPLIED TO MINERAL RESOURCES UNDER ALTERNATIVE B</b>														
<b>Species</b>	<b>Dates</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	
Bald eagle	2/15 - 8/1													
Golden eagle	2/15 - 8/1													
Northern goshawk	2/15 - 8/1													
Northern harrier	2/15 - 8/1													
Cooper's hawk	2/15 - 8/1													
Ferruginous hawk	2/15 - 8/1													
Red-tailed hawk	2/15 - 8/1													
Sharp-shinned hawk	2/15 - 8/1													
Swainson's hawk	2/15 - 8/1													
Turkey vulture	2/15 - 8/1													
Peregrine falcon	2/15 - 8/1													
Prairie falcon	2/15 - 8/1													
Merlin	2/15 - 8/1													
American kestrel	2/15 - 8/1													
Osprey	2/15 - 8/1													
Burrowing owl	2/15 - 8/1													
Great horned owl	2/15 - 8/1													
Long-eared owl	2/15 - 8/1													
Short-eared owl	2/15 - 8/1													
Mexican spotted owl	2/15 - 8/1													
Sage Grouse	3/1 - 5/31													
Crucial Deer and Elk Winter Range	12/15 - 3/15													
Mule Deer Migration Corridor	4/15 - 5/31													

<b>TABLE 4.8.8. SEASONAL RESTRICTIONS WITHIN ESTABLISHED BUFFER ZONES APPLIED TO MINERAL RESOURCES UNDER ALTERNATIVE C</b>													
<b>Species</b>	<b>Dates</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
Bald eagle	1/8 - 8/31												
Golden eagle	1/1 - 8/31												
Northern goshawk	3/1 - 8/15												
Northern harrier	4/1 - 8/15												
Cooper's hawk	3/15 - 8/31												
Ferruginous hawk	3/1 - 8/1												
Red-tailed hawk	1/15 - 8/15												
Sharp-shinned hawk	3/15 - 8/31												
Swainson's hawk	3/1 - 8/31												
Turkey vulture	5/15 - 8/15												
Peregrine falcon	2/1 - 8/31												
Prairie falcon	4/1 - 8/31												
Merlin	4/1 - 8/31												
American kestrel	4/1 - 8/31												
Osprey	4/1 - 8/31												
Burrowing owl	3/1 - 8/31												
Great horned owl	12/1 - 9/31												
Long-eared owl	2/1 - 8/15												
Short-eared owl	3/1 - 8/1												
Mexican spotted owl	3/1 - 8/31												
Sage Grouse	3/1 - 6/15												
Crucial Deer and Elk Winter Range	11/15 - 4/30												
Mule Deer Migration Corridor	4/15 - 5/31, 9/1 - 10/15												

**TABLE 4.8.9. SEASONAL RESTRICTIONS WITHIN ESTABLISHED BUFFER ZONES APPLIED TO MINERAL RESOURCES UNDER ALTERNATIVE D – NO ACTION ALTERNATIVE**

Species	Dates	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bald eagle	All Year												
Golden eagle	All Year												
Northern goshawk	4/15 - 8/20												
Northern harrier	4/1 - 7/15												
Cooper's hawk	5/1 - 8/15												
Ferruginous hawk	All Year												
Red-tailed hawk	4/1 - 7/15												
Sharp-shinned hawk	6/20 - 8/15												
Swainson's hawk	4/1 - 7/15												
Turkey vulture	5/15 - 8/15												
Peregrine falcon	All Year												
Prairie falcon	4/1 - 7/15												
Merlin	4/15 - 6/25												
American kestrel	5/1 - 6/30												
Osprey	4/1 - 7/15												
Burrowing owl	4/1 - 7/15												
Great horned owl	2/1 - 5/15												
Long-eared owl	3/15 - 6/15												
Short-eared owl	4/10 - 6/15												
Mexican spotted owl	3/1 - 8/1												
Sage Grouse (Book Cliffs)	3/15 - 6/15												
Sage Grouse (Diamond Mountain)	3/1 - 6/30												
Crucial Deer and Elk Winter Range													
Book Cliffs - Elk only	11/1 - 3/31												
Diamond Mountain	12/1 - 4/30												

<b>TABLE 4.8.9. SEASONAL RESTRICTIONS WITHIN ESTABLISHED BUFFER ZONES APPLIED TO MINERAL RESOURCES UNDER ALTERNATIVE D – NO ACTION ALTERNATIVE</b>													
<b>Species</b>	<b>Dates</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
Mule Deer Migration Corridor													
Monument Ridge	5/11 - 5/31												
McCook Ridge	10/2 - 5/31												



The decision to analyze (in coordination with the UDWR) impacts that would be mitigated would potentially benefit mineral resource extraction and development in the short-term by allowing some exploration to continue during restricted timeframes. By not implementing timing restrictions, mineral extraction and development would proceed at a faster pace with lower economic costs and risks.

#### 4.8.2.6.2 Alternative B

Wildlife resource decisions to implement timing restrictions on activities that could adversely impact deer and elk winter range would have long-term, indirect, beneficial impacts to mineral resources. Timing restriction for protection of wildlife species under Alternative B is less restrictive than each of the other alternatives. By reducing timing restrictions, mineral extraction and development could proceed at a faster pace with lower economic costs and risks.

Under this alternative, disturbance activities that would displace deer and elk from more than 10% of their total winter habitat at any given time would not be allowed from December 15 through March 15. Waivers would be granted if deer and elk are not present; topography or other attributes screen the activity sufficiently so that the proposed activity would not displace the subject species; or disturbance resulting from the proposed activity would be mitigated. Such waivers are not present under Alternative D – No Action Alternative. Also under this alternative, no more than 10% of deer and elk winter habitat would be subject to surface disturbance and remain unclaimed at any given time compared to 2.4% for Alternatives A and C and an unspecified amount in Alternative D – No Action Alternative.

#### 4.8.2.6.3 Alternative C

Wildlife resource decisions to implement timing restrictions on activities that could adversely impact deer and elk winter range would have long-term, indirect, adverse impacts to mineral resources. Impacts include increasing the costs associated with mineral exploration, extraction, and development.

The impacts of this decision would be the same as for Alternative A and only slightly different than Alternative D – No Action Alternative. Also under this alternative, 560 acres per township (prorated based on percentage of the range within the township [approximately 2.4%]) of deer and elk winter habitat would be subject to surface disturbance compared to 10% for Alternative B, 2.4% for Alternative C, and an unspecified amount in Alternative D – No Action Alternative. Because Alternative D – No Action Alternative does not specify what percentage of new surface disturbing activity would be allowed in deer and elk winter habitat it is unclear if wildlife resource decisions under this alternative would restrict mineral resources development more or less than Alternative D – No Action Alternative.

#### 4.8.2.6.4 Alternative D – No Action Alternative

Wildlife resource decisions to implement timing restrictions on activities that would adversely impact deer and elk winter range would have long-term, indirect, adverse impact to mineral resources. Impacts include increasing the costs associated with mineral exploration, extraction, and development.

The impacts of this decision would be slightly different than Alternatives A and C, and considerable compared to Alternative B. Alternative D – No Action Alternative does not specify

what percentage of new surface disturbing activity would be allowed in deer and elk winter habitat. Therefore it is unclear this particular factor in wildlife resource decisions would restrict mineral resources development more or less than any of the other alternatives.

#### ***4.8.2.7 Effects of Visual Management Decisions on Mineral Resources***

Mineral development activities would be subject to the Visual Resource Management (VRM) Class objectives of the area within which development would occur. Areas with lower scenic values (managed as VRM Class III and VRM Class IV) are allowed a wider range of impacts on visual resources and generally would have negligible impacts on mineral development in the VPA. Areas with higher scenic values (VRM Class I and VRM Class II) allow little or no alteration to the line, form, color and texture that characterize the existing landscape and would have a greater impact to mineral development in the VPA. Table 4.8.10 shows the number of acres within each VRM Class by alternative.

<b>TABLE 4.8.10. VISUAL RESOURCE MANAGEMENT CLASS ACREAGES BY ALTERNATIVE</b>				
<b>VRM Class</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D – No Action</b>
VRM I and II	513,644	286,802	768,890	286,457
VRM III and IV	1,960,356	2,187,198	1,705,110	2,187,543
<b>Total</b>	<b>2,474,000</b>	<b>2,474,000</b>	<b>2,474,000</b>	<b>2,474,000</b>

##### ***4.8.2.7.1 Alternative A***

Under Alternative A, the number of acres included in VRM Classes I and II would increase by approximately 56%, compared to Alternative D – No Action.

An increase in the number of acres in VRM Classes I and II could have an adverse impact on mineral resource development. Direct, adverse impacts would include increased production costs associated with mineral development and the exclusion of mineral development from particular areas. An increase in the number of acres in VRM Classes I and II would also lead to a decrease in the number of locations where potential wells could be drilled. The loss of locations could indirectly lead to a decrease in the available supply of oil and natural gas to western markets.

Indirect impacts of visual resources decisions on mineral development would be adverse. A decrease in the number of potential oil and gas wells would lead to a decrease in royalties paid to the federal government and/or the State of Utah.

##### ***4.8.2.7.2 Alternative B***

Under Alternative B, the number of acres included in VRM Classes I and II would not change significantly (0.1% increase), compared to Alternative D – No Action Alternative. Impacts would be similar to Alternative D – No Action.

##### ***4.8.2.7.3 Alternative C***

Under Alternative C, the number of acres included in VRM Classes I and II would increase by approximately 268%, compared to Alternative D – No Action Alternative.

An increase in the number of acres in VRM Classes I and II would have an adverse impact on mineral resource development. Direct, adverse impacts would include increased production costs associated with mineral development and the exclusion of mineral development from particular areas. An increase in the number of acres in VRM Classes I and II would also lead to a decrease in the number of locations where potential wells could be drilled. The loss of locations could indirectly lead to a decrease in the available supply of oil and natural gas to western markets.

Indirect impacts of visual resources decisions on mineral development would be adverse. A decrease in the number of potential oil and gas wells would lead to a decrease in royalties paid to the federal government and/or the State of Utah.

#### 4.8.2.7.4 Alternative D – No Action Alternative

Under Alternative D, the number of acres included in VRM Classes I and II would not change.

Direct, adverse impacts would continue to include increased production costs associated with mineral development, the exclusion of mineral development from a particular area and a decrease in the number of locations where potential wells could be drilled. The loss of locations could indirectly lead to a decrease in the available supply of oil and natural gas to western markets.

Indirect impacts of visual resources decisions on mineral development would be adverse. A decrease in the number of potential oil and gas wells would lead to a decrease in royalties paid to the federal government and/or the State of Utah.

### **4.8.2.8 Summary of Impacts from Alternatives**

#### 4.8.2.8.1 Alternative A

Resource decisions made under Alternative A would, in general, have a long-term, indirect, adverse impact on mineral resource development in the VPA. Resource decisions would be slightly more restrictive to minerals development than Alternative D – No Action Alternative. There would be an increase in the potential number of oil and gas wells that could be drilled in each of the six RFD areas. Resource decisions would be less restrictive to minerals development than those made for Alternative C and more restrictive than those made for Alternative B.

#### 4.8.2.8.2 Alternative B

Resource decisions made under Alternative B would have both long-term, indirect, adverse, and long-term, direct, beneficial impacts on mineral resource development in the VPA. There would be an increase in the potential number of oil and gas wells that could be drilled in each of the six RFD areas. In general, resource decisions would be less restrictive to mineral resources development than those made for each of the other alternatives. Cultural and wildlife resource decisions would have a long-term, direct, beneficial impact on mineral resource development. All other resource decisions would have an indirect, adverse impact on mineral resource development but not substantially more so than each of the other alternatives. Resource decisions would be substantially less restrictive than those for Alternative C.

#### 4.8.2.8.3 Alternative C

Resource decision made under Alternative C would have a long-term, indirect, adverse impact on mineral resource development in the VPA. There would be a slight decrease in the potential number of oil and gas wells that could be drilled in each of the six RFD areas. In general, resource decisions would be more restrictive than those made for each of the other alternatives.

#### 4.8.2.8.4 Alternative D – No Action Alternative

Resource decision made under Alternative D would have a long-term, indirect, adverse impact on mineral resource development in the VPA. Resource decisions would be less restrictive than those made for Alternative C, more restrictive than Alternative A, and only slightly more restrictive than Alternative B.

### **4.8.3 Mitigation Measures**

None of the alternatives would result in more than a 0.4% net decrease in the number of predicted oil and gas wells in the VPA. Similarly, none of the alternatives would substantially restrict mineral development. None of the alternatives would result in impacts that would necessitate mitigation of oil, gas, and mineral resources; therefore, mitigation measures would not be necessary.

### **4.8.4 Unavoidable Adverse Impacts**

None of the alternatives would result in more than a 0.4% net decrease in the number of predicted oil and gas wells in the VPA. Similarly, none of the alternatives would substantially restrict mineral development. Accordingly, none of the alternatives would result in unavoidable adverse impacts to mineral development.

### **4.8.5 Short-term Uses Versus Long-term Productivity**

Once fossil fuel and mineral resources are extracted and the short-term beneficial uses (e.g., increased supply of minerals to meet demand, decreased production costs, increased royalties) are realized, the resources would no longer be available for long-term or future production.

### **4.8.6 Irreversible and Irretrievable Impacts**

The extraction and development of mineral resources from the VPA would result in an irreversible and irretrievable loss of those minerals due to the finite nature of the resource.